

[Detailed Description of the Invention]

[0001]

[Industrial Application] About the injection press-forming approach, by exciting to the melting resin in a cavity especially, this invention promotes increase-izing of the press force with each mold, and fluidization of resin, and relates to the new amelioration for fabricating large mold goods by the small press force.

[0002]

[Description of the Prior Art] Conventionally, as this used kind of the injection press-forming approach, the core mold of the core die setting section prepared in the movable head to the cavity mold of the cavity die setting section prepared in stationary platen was moved, and, generally the melting resin injected in the cavity between each mold according to that press force was fabricated.

[0003]

[Problem(s) to be Solved by the Invention] Since the conventional injection press-forming approach was constituted as mentioned above, the following technical problems existed. That is, while it is extensible with the mold clamp force, in order to be cooled with each mold and to solidify gradually, it was difficult for the melting resin injected in the cavity by which die opening was carried out for a while for the flow nature of melting resin to worsen and to spread in homogeneity in the large range in a cavity, and it was difficult to obtain large mold goods. in order [moreover,] to have to strengthen the mold clamp force between a movable head and stationary platen -- a powerful mold clamp means -- needing -- a whole configuration -- large -- not becoming -- it was impossible to have not obtained but to have accepted the demand of a miniaturization.

[0004] By having been made in order that this invention might solve the above technical problems, and exciting to the melting resin in a cavity especially, increase-izing of the press force with each mold and fluidization of resin are promoted, and it aims at offering the injection press-forming approach and equipment which were made to fabricate large mold goods by the small press force.

[0005]

[Means for Solving the Problem] The injection press-forming approach by this invention is an approach which was made to perform excitation in the cavity which was made to move a core mold to a cavity mold, and was formed between said cavity mold and the core mold from the nozzle of an injection unit to said melting resin in the injection press-forming approach of having made it inject melting resin.

[0006] In the injection press equipment it was made to inject melting resin from the nozzle of an injection unit in the cavity which the injection press-forming equipment by this invention made move a core mold to a cavity mold, and was formed between said cavity mold and the core mold The stationary platen which has the cavity die setting section for supporting said cavity mold through the 1st elastic body, It is the configuration equipped with the movable head which has the core die setting section for supporting said core mold through the 2nd elastic body, and the excitation means for exciting either both said cavity mold or a core mold.

[0007]

[Function] It will be in the condition which a little movable head was raised and carried out die opening of a little core mold in the injection press-forming approach and equipment by this invention, melting resin is injected in a cavity from an injection unit, and after that, if an excitation means is made to excite, excitation of a cavity mold and the core mold is carried out and they are vibrated, melting resin receives excitation, and the mold clamp of the movable head will be carried out to stationary platen, giving this vibration.

[0008] In this case, the press force added to melting resin increases gradually, fluctuating minutely according to excitation, and extends the melting resin in a cavity widely. Moreover, the melting resin part which touches each mold according to this excitation operation is heated, and fluidization of resin can be made to increase remarkably. Therefore, the mold clamp force applied between a movable head and stationary platen can fabricate larger mold goods than before by the small press force also by the same enough mold clamp force as a next door and the former.

[0009]

[Example] Hereafter, the suitable example of the injection press-forming approach by this invention and equipment is explained to a detail with a drawing. drawing 3 from drawing 1 -- until -- the sectional view in which the equipment applied to the injection press-forming approach by this invention is shown, and drawing 1 shows the time of injection, the sectional view in which drawing 2 shows the time of a mold clamp, and drawing 3 are the sectional views showing the time of the completion of shaping.

[0010] What is shown with a sign 1 in drawing 1 is stationary platen which has the cavity die setting section 2 through die setting implement 2A, and the cavity mold 3 which has cavity 3a is installed inside in attachment crevice 2a of this cavity die setting section 2. In the 1st crevice 2b formed in the both-sides section of this attachment crevice 2a, 1st support projected part 3b formed in said cavity type 3 of both-sides section through the elastic body 4 of a pair which consists of a

spring or rubber is held, and this cavity mold 3 is formed in said cavity die setting section 2 free [actuation] through this 1st elastic body 4.

[0011] In said cavity 3a, the core mold 5 is installed inside free [vertical movement], and 2nd support projected part 5b formed in this core type 5 of both-sides section is prepared in 2nd crevice 8b formed in the both-sides section of the core die setting section 8 fixed to the movable head 6 through the die setting implement 7, and is held from a spring or rubber in the condition which can operate freely with the 2nd elastic body 9 of a pair. In addition, the 1st and 2nd above-mentioned elastic body 4 and 9 can also use only not only when using both, but either.

[0012] The 1st excitation means 10 and the 2nd excitation means 11 which consist of a linear trembler of the common knowledge constituted so that vibromotive force might be produced are established in the fixed direction, and the resin runner 12 who forms a L character mold where said cavity die setting section 2, the 1st excitation means 10, and the cavity mold 3 are penetrated is formed in the inferior surface of tongue and top face of said cavity mold 3 and the core mold 5. This resin runner's 12 point 12a is open for free passage in said cavity 3a, and that back end section 12b is constituted so that nozzle 13a of an injection unit 13 may contact. In addition, each above-mentioned excitation means 10 and 11 can also use only not only when using both, but either.

[0013] Next, actuation is described. Where it made it go up for a while through the mold clamp means and the die opening means which a movable head 6 is not illustrated probably and die opening of the core mold 5 is carried out for a while Melting resin is injected in cavity 3a from an injection unit 13, and after that, if the excitation means 10 and 11 are made to excite, excitation of the cavity mold 3 and the core mold 5 is carried out and they are vibrated, melting resin 20 receives excitation, and the mold clamp of the movable head 6 will be carried out to a stationary platen 1 side, giving this excitation (shown in drawing 2).

[0014] In this case, the press force added to melting resin 20 increases gradually, fluctuating minutely according to excitation, and extends widely the melting resin 20 in cavity 3a. Moreover, melting resin 20 part which touches each molds 3 and 5 according to this excitation operation is heated, and fluidization of resin can be made to increase remarkably. Therefore, the mold clamp force applied between a movable head 6 and stationary platen 1 can fabricate larger mold goods than before by the small press force also by the same enough mold clamp force as a next door and the former. Moreover, a movable head 6 can be pressed, vibration exciting of each excitation means 10 and 11 can be suspended, and as shown in drawing 3 , mold-goods 20A can be obtained until it finally carries each elastic bodies 4 and 9 of the both sides of the cavity mold 3 and the core mold 5 through (condition to crush). In addition, although the above-mentioned example described the case where the excitation means 10 and 11 were directly formed in each molds 3 and 5, also when it prepares in stationary platen 1 or a movable head 6, the same operation effectiveness as the above-mentioned can be acquired, for example.

[0015]

[Effect of the Invention] Since the injection press approach and equipment by this invention are constituted as mentioned above, they can acquire the following effectiveness. That is, in order to mind any of a core mold, a cavity mold, stationary platen, and a movable head they are and to excite melting resin, while melting resin spreads by this excitation, for a ***** reason, it becomes increase-ization of the press force also by the same press force as the former about fluidization of resin with the generating heat at the time of excitation, and large mold goods can be fabricated by the small press force.

[Translation done.]